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# Collection and conservation of extinct land races of rice from Raigarh district of Chhattisgarh

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**Abstract**

An exploration trip was conducted during *kharif* 2012-13 for the collection of rare and valuable rice land races from different blocks of raigarh district. A total of 97 landraces were collected by the exploration team from 41 villages of four different blocks *viz.,* Tamnar, Gharghoda, Lailunga and Dharamjaigarh from Raigarh district. Based on the morphological and quality characters the diverse landraces were collected. The valuable landrace conserved by farmers namely, Borojhari, Boonde, Geeta, Saria, Thadvel, Bathras, Agiasal, Ratanchuri, Goirmal, Pangudi, 90 No., Ganga and Sonakathi. These valuable landraces possesses the characterstics such as fine grain, aroma, red pericarp, early maturity, submergence tolerance and good head rice recovery. The collected landraces will be utilized for the genetic enhancement and value addition of existing varieties of rice. Thus, it may be helpful not only in conserving the genetic resources but also exploit their potential in terms of yield and other quality characters.

**Keywords:** Rice, germplasm, genetic diversity

## INTRODUCTION

Rice is a major source of staple food world over. About 80% of world rice production comes from the cultivation of Asian rice (*Oryza sativa* L.) which is believed to have originated in South and Southeast Asia .Thousands of years of selection through natural and human assisted processes has resulted in a tremendously broad range of genetic diversity in rice as reflected in more than 140, 000 primitive varieties (landraces) and improved varieties in *Oryza sativa* existing today. The amount of genetic variability of a species is essential for its survival and adaptation in different environments. The diversity in agricultural genetic resources viz., cultivars, landraces, ecotypes, weedy races and wild relatives of crop plants form a gene pool used for improvement of important characters, broadening of genetic base of cultivars and also a source of new diversity for agriculture [1].. As a natural source of genes for disease and insect tolerance, these materials have also a high potential to increase the genetic basis of elite rice lines and cultivars. Narrow genetic base is traditionally pointed out as the main reason for the stagnation of genetic gains of rice breeding programmes, and for the increase of pest and disease susceptibilities in modern rice cultivars [3, 4]. ]. The present study was therefore undertaken to collect and conserve available rice genetic diversity from the block level of Raigarh district belongs to Chhattisgarh state besides evaluating local farmer knowledge about these genetic resources.

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## MATERIALS AND METHODS

The geographical location of Chhattisgarh is 17 ° 46 ‘N to 24 ° 5 ‘N latitude and from 80 ° 15 ‘E to 84 ° 20 ‘E longitude. Madhya Pradesh borders Chhattisgarh in the north western part. Maharashtra borders on the west and Andhra Pradesh lies in its south. Orissa is located in the eastern side. The state of Jharkhand borders Chhattisgarh in the north eastern part. Chhattisgarh Geography is diverse and thus is very interesting. The total area of Chhattisgarh is 192,000 square km.. About 44% of the total area of Chhattisgarh is covered by forest.

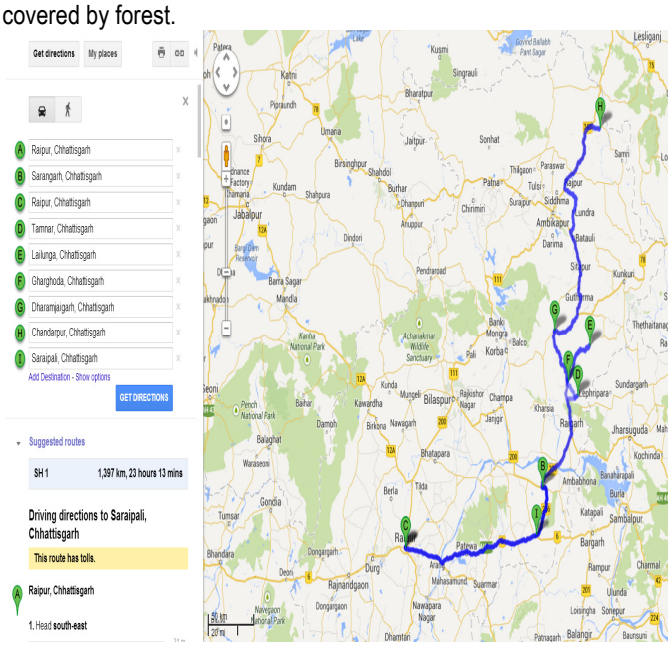


Fig 1. Route map of exploration trip of different region of Raigarh district (Source: Google Map)

The exploration was made l Raigarh district (having latitude and longitude 21.87 ° N and 83.38 ° E, respectively) covering the four different blocks viz.,Tamnar(21.89 ° N and 83.39 ° E), lailunga (21.89 ° N and 83.39 ° E), Gharghoda (22.18 ° N and 83.33º E) and Dharamjaigarh (21.28 ° N and 83.13 ° E) .During these exploration and collection trips conducted in the areas falling in the Raigarh district, farmer knowledge and information about past cultivation of crops including rice landraces was also recorded (Fig1)

A total of 97 rice land races were collected from these regions (Fig 2). All these land races possesses different morphological and quality traits.

Fig 2. Different Landraces collected from the different region of Raigarh district.

## RESULTS AND DISCUSSION

Landraces and traditional varieties of rice have been utilized by inhabitants in and therefore hold a special position in the cultural heritage of the region. However, unfortunately for many reasons the genetic diversity of rice has considerably decreased . Out of many reasons the most important reason is the replacement of land races by high yielding hybrid varieties. During the course of our present study we have noted that elderly farmers throughout district fondly remember these landraces and their quality attributes. The names of some important rice landraces which have been collected by us with local farmers are presented in Table 1.

Table 1. Rice landraces collected from local farmers of Raigarh district

| S. No. | Name | Block |
|---|---|---|
| 1 | Boonde | Tamnar |
| 2 | Komal | Tamnar |
| 3 | Geeta | Tamnar |
| 4 | Thadvel | Tamnar |
| 5 | Saria | Tamnar |
| 6 | Byalo | Gharghoda |
| 7 | Jawaphool | Gharghoda |
| 8 | Ramjeera | Gharghoda |
| 9 | Kherasal | Gharghoda |
| 10 | Kadamphool | Gharghoda |
| 11 | Bathras | Lailunga |
| 12 | Agiasal | Lailunga |
| 13 | Ratanchuri | Lailunga |
| 14 | Pangudi | Lailunga |
| 15 | Goirmal | Lailunga |
| 16 | Ratajhinga | Lailunga |
| 17 | Barhasaal | Dharamjaigarh |
| 18 | Tulsimogra | Dharamjaigarh |
| 19 | Hareliphool | Dharamjaigarh |
| 20 | Doobraj | Dharamjaigarh |

Most of these names are found in the literature. Elderly farmers in their sixties and beyond have some knowledge about these landraces whereas younger generation is generally ignorant about these genetic resources. Information provided by farmers during our survey suggests that some of these landraces such as Byalo,Jawaphool, Ramjeera, Doobraj were more common than others. Characteristics of these landraces as told by farmers and confirmed from previous literature are presented in Table 2.

Table 2. Rice land races with their characteristics

| S.No. | Name | Characterstics |
|---|---|---|
| 1 | Boonde | Red pericarp, sweet in taste, good head rice recovery |
| 2 | Komal | Very early maturity, good grain quality |
| 3 | Geeta | Very early maturity |
| 4 | Thadvel | Very early maturity |
| 5 | Saria | Very early maturity |
| 6 | Byalo | Gharghoda |
| 7 | Jawaphool | Scented |
| 8 | Ramjeera | Scented |
| 9 | Jeeraphool | Scented |
| 10 | Kadamphool | Scented |
| 11 | Bathras | Semi deep water landraces,Submergence tolerance |
| 12 | Agiasal | Semi deep water landraces, Submergence tolerance |
| 13 | Ratanchuri | Semi deep water landraces, Submergence tolerance |
| 14 | Pangudi | Semi deep water landraces, Submergence tolerance |
| 15 | Goirmal | Semi deep water landraces, Submergence tolerance |
| 16 | Ratajhinga | Semi deep water landraces, Submergence tolerance |
| 17 | Barhasaal | Bold grain and scented |
| 18 | Tulsimogra | Scented |
| 19 | Doobraj | Scented |

## CONCLUSION

The collected landraces from different region are valuable landraces possessing the characteristics such as fine grain, aroma, red pericarp, early maturity, submergence tolerance and good head rice recovery. The collected landraces will be utilized for the genetic enhancement and value addition of existing varieties of rice. Thus, it may be helpful not only in conserving the genetic resources but also exploit their potential in terms of yield and other quality characters.

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